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(71) Applicant(s)
Thomas Hasler
6 Devanha Gardens South, ABERDEEN, AB11 7UG,
United Kingdom

(72) Inventor(s)
Thomas Hasler

(74) Agent and/or Address for Service
Murgitroyd & Company
373 Scotland Street, GLASGOW, G5 8QA,
United Kingdom

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(56) Documents Cited
GB 0285684 A EP 0328198 A1 US 3885331 A

(58) Field of Search
UK CL (Edition S) E1F FWB FWGE
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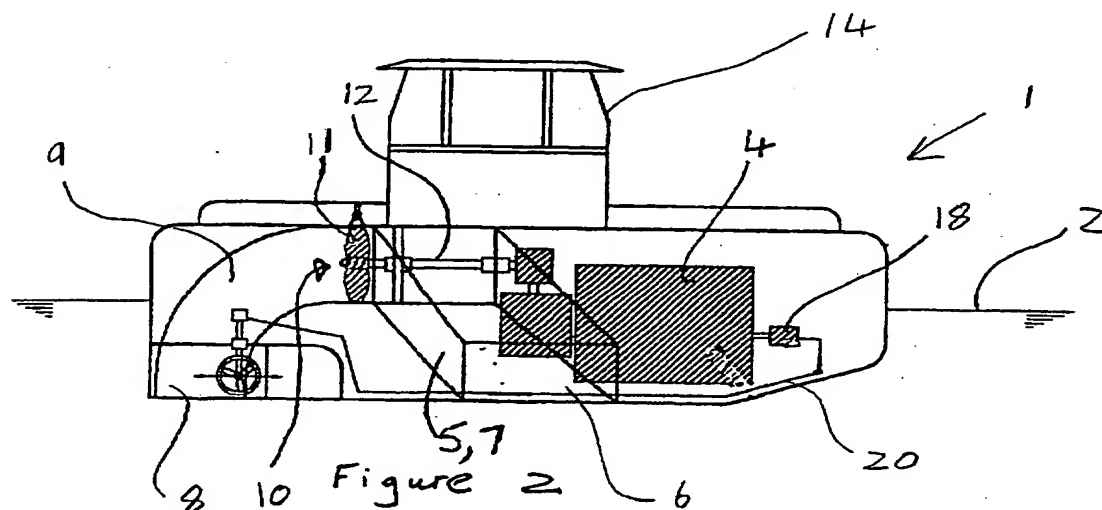
(54) Abstract Title
Dredging Vessel

(57) A vessel 1 designed for maintenance dredging underwater areas has a water inlet 6, a propeller 10 and a water outlet 8 pointing downwards to displace sea or riverbed material.

The propeller is rotated by an engine 4, and drives water from the inlet to the outlet.

Channels 5, 7, 9 direct the water from the inlet, through the propeller and out of the outlet. A vacuum pump evacuates the air from the channels prior to operation. The weight of water lifted in the channels provides extra ballast to counteract the thrust of the water exiting the outlet.

The vessel is manoeuvred by at least one additional propeller, and controlled from the wheelhouse 14.



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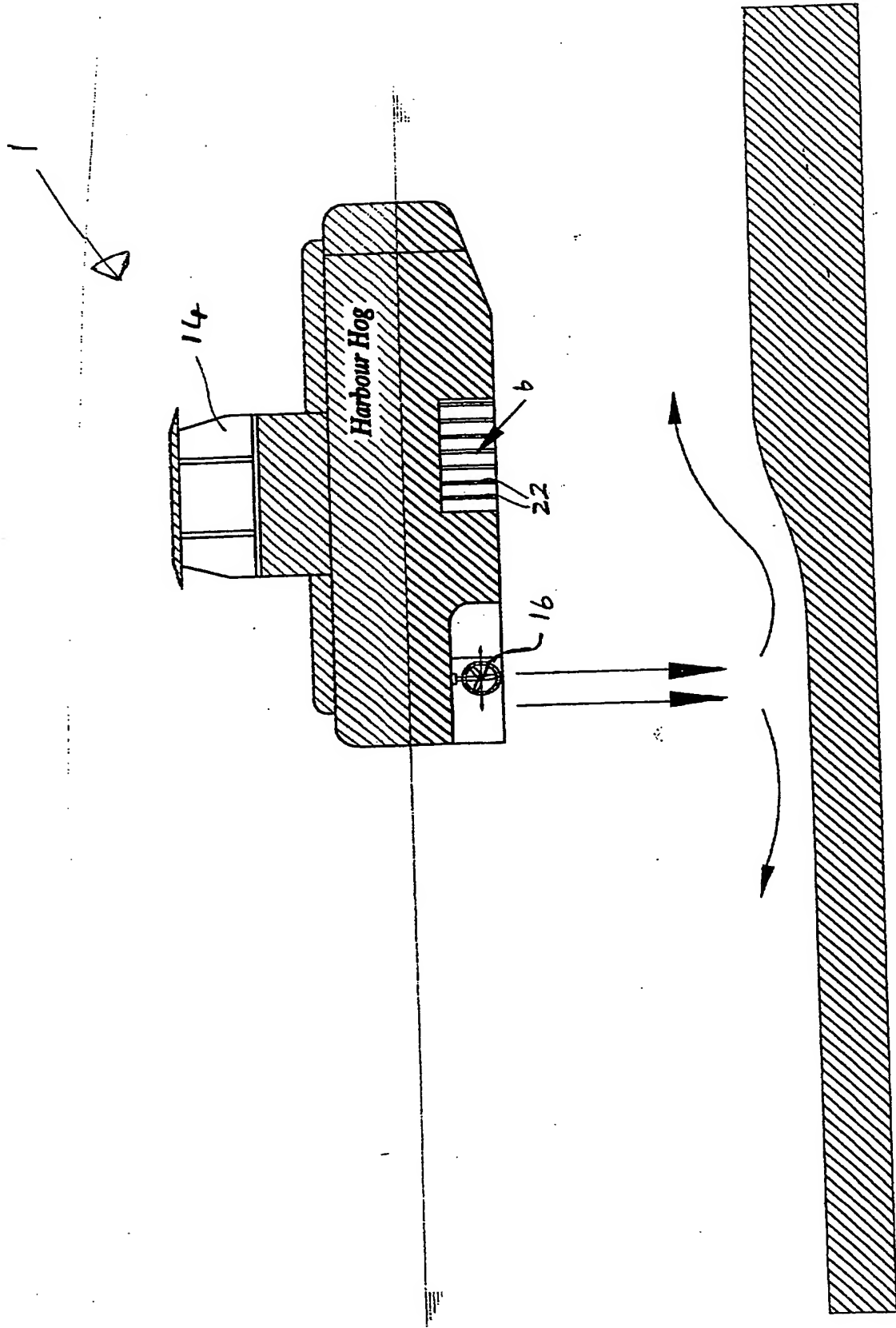


Figure 4

1 According to the present invention there is provided a
2 vessel for excavating underwater areas comprising;
3 at least one fluid inlet and at least one fluid outlet;
4 a drive means mounted between the fluid inlet and fluid
5 outlet for moving fluid from the fluid inlet to fluid
6 outlet, and a motor for driving the drive means.

7

8 Preferably the drive means is a rotor.

9

10 Preferably the motor is a diesel engine.

11

12 Preferably the water outlet is pointing in a
13 substantially downwards direction, typically from the
14 bottom of the vessel.

15

16 Preferably at least one secondary engine is present to
17 manoeuvre the vessel. Most preferably there are two
18 secondary engines. Preferably the secondary engines
19 are hydraulic-powered engines having a separate power
20 supply but they could be powered from the motor.

21

22 Preferably the water inlets have grids or other filter
23 means to resist passage of solid objects into the
24 inlet.

25

26 Preferably the rotor has blades attached thereto.

27

28 Preferably the fluid inlets are water inlets.

29

30 Typically fluid moving between the inlet and the outlet
31 is lifted above the level of the inlet, typically by
32 directing it through a channel that extends upwards

1 which an operator may control the workboat 1 and the
2 drive means.

3
4 The diesel engine 4 rotates the shaft 12 and the
5 propeller 10. The rotation of the propeller 10
6 evacuates air from the inlet channels 5, 7 and draws
7 water into the water inlets 6 and through the inlet
8 channels 5, 7 past the propeller 10. The water is then
9 forced through the outlet channel 9. The outlet
10 channel 9 contains a 90° bend to direct the water
11 downwards and out through the water outlet 8 on the
12 bottom of the workboat 1. The propeller thus produces
13 a low velocity, high volume column of water directed
14 vertically downwards towards the seabed directly
15 beneath the workboat 1.

16
17 The water inlets 6 are normally beneath the water line
18 2 when the workboat 1 is operating. The inlet channels
19 5, 7 extend inwards across the workboat and towards the
20 long axis of the workboat 1 at an angle greater than 90°
21 but less than 180°, preferably around 110° - 160° and
22 typically 135°. Arranging the inlet channels at this
23 angle has the advantage that water is forced through
24 the inlet channels 5, 7 when the workboat 1 is moving
25 in its normal forwards direction.

26
27 The inlet channels 5, 7 also extend upwards from the
28 inlets 6 in order to lift the water in the channels 5,
29 7 above the waterline 2. The weight of the water
30 lifted in the channels 5, 7, 9 provides extra ballast
31 to counteract the thrust of the water being forced
32 downwards through the outlet 8. Additionally, the

1 The workboat 1 can excavate all non-cohesive materials
2 such as cobbles, gravel, sand, silt, sediment or soft
3 clay. (normally with shear strength less than 15kPa) and
4 can operate in moderate currents of up to 5 knots.
5 Excavation rates of up to 1000m³/h may be obtained. It
6 is to be understood that the invention is not limited
7 to excavation of these materials, in these currents or
8 at such an excavation rate.

9
10 Normally the workboat 1 will be used in shallow water
11 depths such as those between 2 metres and 15 metres.
12 It is to be understood that the invention is not
13 limited to operation in this depth. The local tidal
14 range allows the dredging of normally deeper areas at
15 low tide. Similarly particularly shallow areas may be
16 dredged at high tide.

17
18 When the workboat 1 is not dredging, the channels 5, 7,
19 9 contain air above sea level. This allows access for
20 maintenance or repair.

21
22 Modifications, changes, improvements and variations may
23 be made without departing from the scope of the
24 invention.

25

26

27



INVESTOR IN PEOPLE

Application No: GB 0002810.0
Claims searched: All

Examiner: Philip Osman
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Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.S): E1F; FWB, FWGE
Int CI (Ed.7): E02F
Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
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| X | GB0,285,684 (Stewart) Esp. fig 2 | 1,2,6 |
| X | EP0,328,198A1 (Rapid Multipurpose (UK) Wing Dredging Co. Ltd) Esp. Figs 2-5. | 1-5 |
| X | US3,885,331 (Mathieu) Esp. Fig 1. | 1,2,6 |

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|---|-----------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------|
| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
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